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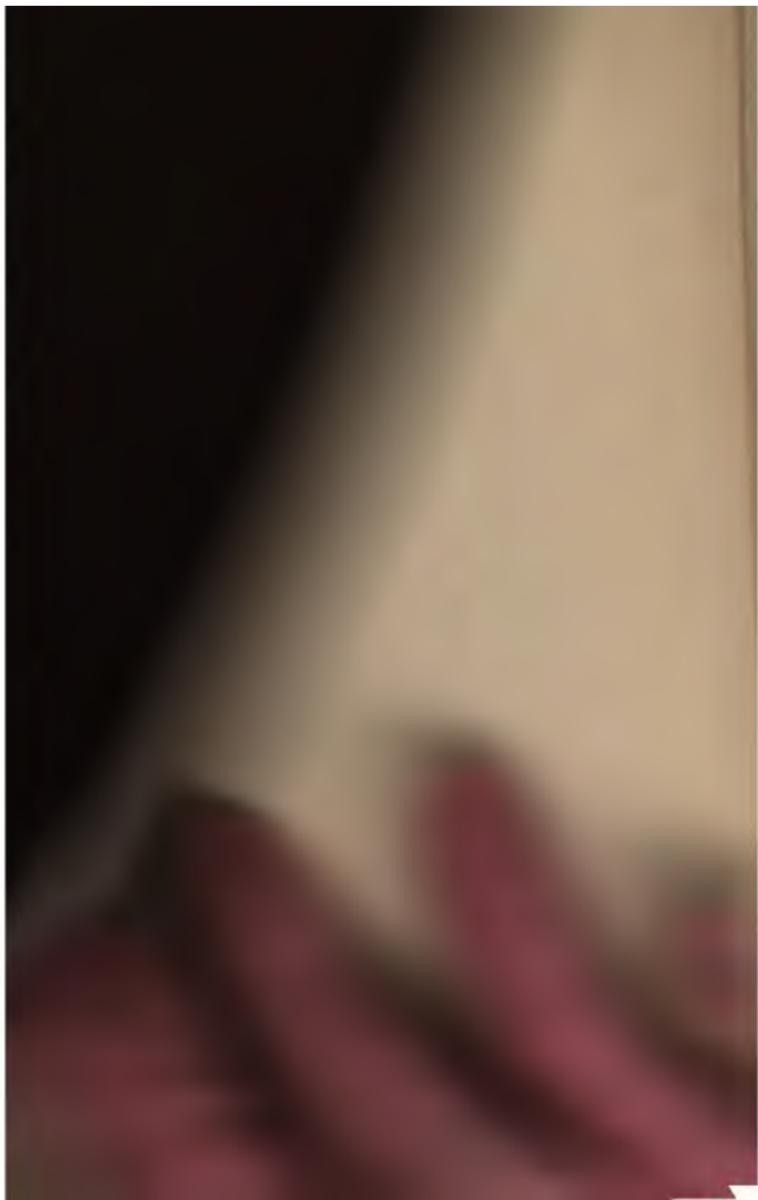
How to be Plump

BY

T. C. Duncan M. D.

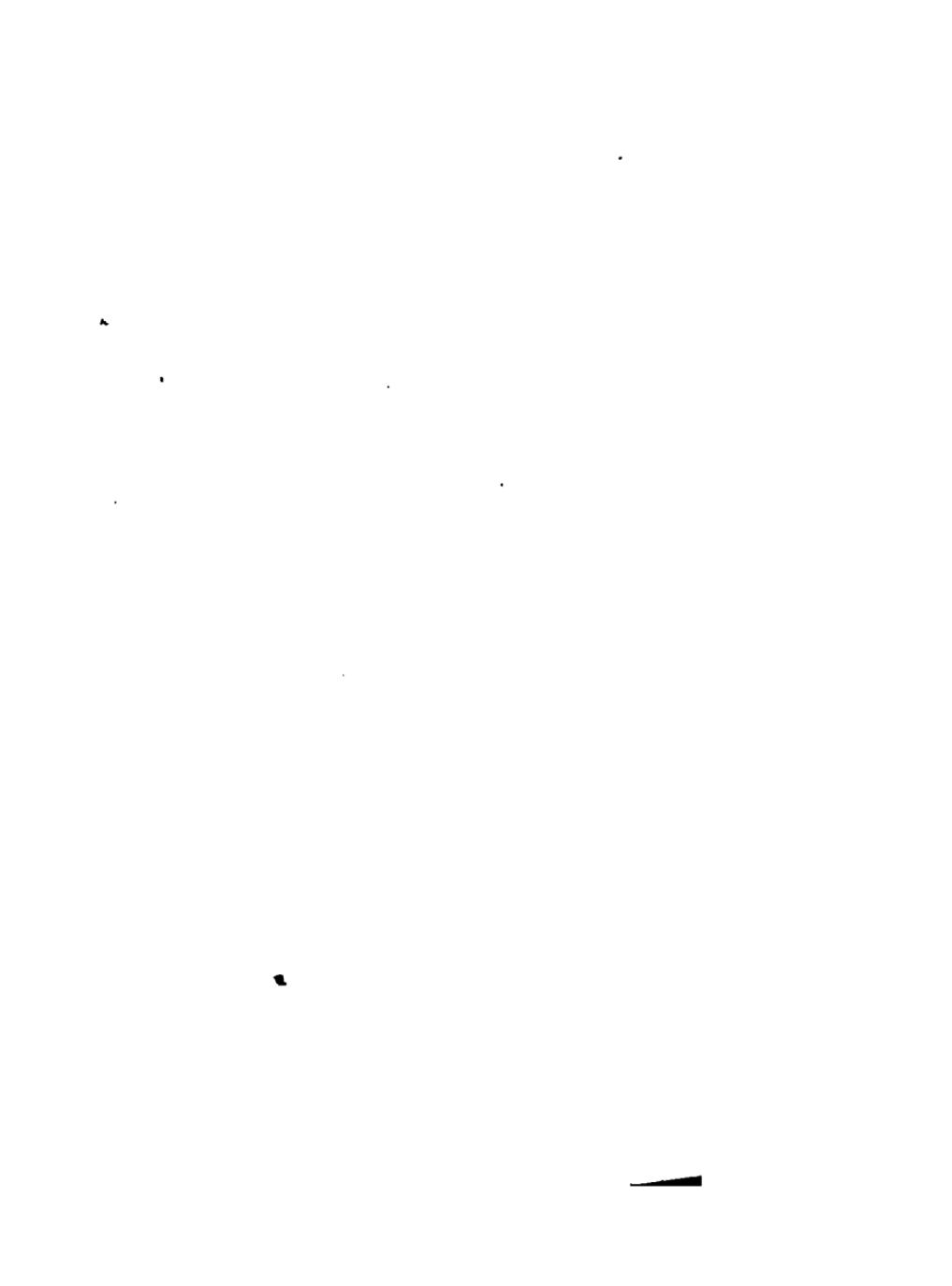
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—A Chicago publisher has issued a book entitled "How to Become Plump." The old way, you remember, was to fall out of a third-story window and come down plump. The new method is less dangerous, but not so certain.—
Nor. Herald.

try G. Piffard.

HOW TO BE PLUMP:

OR

TALKS ON

PHYSIOLOGICAL FEEDING,

BY

T. C. DUNCAN, M. D.,

EDITOR OF THE UNITED STATES MEDICAL INVESTIGATOR,
AUTHOR DISEASES OF INFANTS AND CHILDREN, WITH
THEIR HOMEOPATHIC TREATMENT, ETC.



CHICAGO:
DUNCAN BROTHERS, PUBLISHERS.

1878.

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P R E F A C E.

“ How shall I get fleshy ? I would give the world to be as plump as Miss — ! ” “ Poor child ; it is nothing but skin and bone ! I cannot bear to undress it ! What shall I feed it, that will fat it up ? ” “ I would give a dollar a pound for more fat ! ” “ I flesh-up in winter, and then I feel so much better ! ” “ This climate agrees with me nicely ; I never was so well and fleshy in my life.” “ Since I became fleshy I am very well, indeed.” “ She was thin and sickly, but now is the very picture of health.” “ When in Europe I was so fleshy, and had such an appetite ! ” “ While drinking the water at — I felt so much better and fleshed up.” “ The hot baths did me so much good ; but cold baths make me sick.” “ I have fleshed up remarkably this year (a wet year), and feel, oh, so much better ! ” “ When I

weighed one hundred and forty pounds, I felt well ; now I weigh only one hundred and ten pounds, and feel so miserable ! ” “ What has fifteen or twenty pounds of fat to do with health ? ” Such are a few of the problems that cluster around, “ HOW TO BE PLUMP,” the solution of which this work attempts.

Why cannot “ the picture of health ” be painted in all faces ? Why is plumpness associated with health, and leanness with disease ? Why are “ Americans proverbially lean ? ” These are vital questions, that touch the philanthropic, interest the statesman, and arouse scientific investigation.

The rules for healthy feeding are very simple, when once understood. The following pages have been prepared, so as to give them the widest dissemination with the hope that they may prove as valuable to every lean person, as their personal and professional application has been to

THE AUTHOR.

133 S. Clark Street, CHICAGO.

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INTRODUCTION.

DURING the last ten years, the question of physiological feeding for infants, children, youth and adults when sick and well, has been one to which I have given much thought. The quieting effect of a few pounds of fat gave me a clue to much of the restless activity of Americans. The fact that thin children and youths are precocious, and as adults are imperfectly developed, was an observation that threw much light on the physical degeneracy of our people, and at the same time lifted a dark cloud of suspicion from the holy atmosphere of American motherhood. Immature trees bear little or no fruit. It was a happy relief when I found that fat would delay and perfect development as well in America, as in Great Britain, and that the absence of a moist equable climate might be in a great measure compensated for by a liquid diet. Never till after the great Chicago fire did I fully appreciate the fact that

the best physiological diet is the cheapest and most convenient.

A few days after that disastrous event, a friend came to my office with a poor, pale, emaciated mother, nursing a large, twelve months old child. To wean the child would kill it, while to continue to allow it to nurse would be slow death for both, unless she was reinforced at once with milk fat, and blood. The mother had a severe cough with profuse green expectoration, headache, palpitation, constipation, leucorrhœa profuse and green, urine scanty and high colored — in fine, apparently in the last stage of consumption. Her diet was tea clear, and bread; she had lost all, and that was only what she could eat of the food the Relief offered. I inquired if she drank water. "No sir!" Milk? "No." Ordered milk with cracker. In thin people there is too much acidity to digest milk, while adding cooked starchy food aids its assimilation. She was directed to take freely of thin soups at first, then make them richer. She was also to continue her "bread and tea" with much milk and well sweetened. The tea was too much of a prop

to be suddenly removed. Between meals she was directed to take water freely, or water and milk with a pinch of salt, which insures better digestion. Gave the indicated medicine, *Sepia*. Improvement began at once, and when I last saw her three months afterwards she was plump and vigorous — the picture of health.

Prof. Blot says, "Soups are to old people what milk is for children." If he had said that soups are to *all* people what milk is for babies, he would have come nearer the truth.

In the following pages an attempt has been made to present the principles that underlie the question of proper feeding. To give the full physiological explanations of why one article is fattening and another is not, would swell this work beyond its scope.

If the perusal of these pages will the better enable a single physician to direct the food proper for his many and varied patients; will enable a mother to keep her children fat, fair and rosy; to help one youth to mature slowly but perfectly; to assist any young lady to keep plump and well; to prevent any rushing business man from breaking

down for the want of a good bank account of fat laid up for emergencies, or in any way conduce to the happiness of mankind and [the spread of that broad charity that "does as we would be done by," this little work will have fulfilled an important mission.

CHAPTER I.

How I Became Plump.

“ Well, Doctor, I declare, how fleshy you are getting,” said Artist Reed. Do tell us what you eat and drink, for when I knew you first, you were as poor as the rest of us. I really thought you were consumptive, but you certainly do not look like it now.”

“ Yes, I have consumption three times a day,” said Doctor—laughing. “ If people fed better there would not be so much phthisis.

“ How do you get your appetite ? I have a good appetite, if the food is all right, but I do not get fleshy. Oh, I guess you practice the maxim : Laugh and grow fat !”

“ No, I laugh because I am fleshy and feel buoyant.”

“ Well, come to think, there *was* a sombre atmosphere about you. But tell us what you eat? Do you take beer with your meals ?”

“ I never drink beer— would rather take water and gum in a different way.”

“ Beer is fattening is it not? What is its combination any way? Germans who drink beer get fat. But beer never fattened me.”

“ As a rule, the Germans do get fleshy, but it is not all owing to the beer. They take also large quantities of soup, bread and coffee, all of which are fattening. Beer is composed of about 80 per cent. of water, 9 of gum or dextrine, 2 or 3 per cent. of alcohol and the rest carbonic acid, hops, salts, etc.

“ Water and gum fattening! That is a queer idea. I know there is not much fat about alcohol. Perhaps I drink too much whiskey to get fat? Water I don’t care for.”

“ Stimulants interfere with the fattening process. Did you ever see a thin person who did like water? About 70 per cent. of the healthy body ought to be nothing but water !”

“ So you think that water is fattening ?”

“ Well it helps. The body is composed of something besides water you know. The secret is in taking the proper proportions of solids and fluids and in knowing when the one, and when the other should predominate in our food.”

“ Well, tell me how you became fleshy ?”

“ It is not a long story. Some winters ago I had a patient in the oyster trade ; he had a good deal of sickness in his family and came to see me almost every day, and always brought a can or two of oysters.”

“ I did not know that oysters were fattening. How did you cook them ?”

“ Well, in almost every shape, but generally in a stew, and I ate many raw.”

“ Did you eat anything else ? Did not the stew fill you up so you could not eat anything else ?”

“ After, or with the oysters we had our other food.”

“ Why did not Mrs. —, get fleshy also ?”

“ Well, she never eats hearty, does not like oyster stews, and always puts vinegar and pepper on her raw oysters.”

" Do vinegar and pepper interfere with getting fat? How, pray?"

" Acids of all kinds quicken the circulation, unduly excite the system, while at the same time they tend to break down the cells."

" So excitement prevents fattening also?"

" Excitement takes away the appetite by unduly stimulating other parts of the brain. I have seen nervous, hysterical women go weeks without eating enough to keep a bird alive."

" Did they not grow thin — were they not hungry?"

" Of course they steadily lost flesh. They had no appetite but did drink water, and strangest of all slept very little, until cured."

" I should think they would have died. How do you account for it?"

" The nervous excitability of the system kept the brain supplied with blood. The system lived on itself."

" Well, I declare, we are fearfully and wonderfully made. Is it not a good rule to eat and drink what you want?"

"It would seem that the system ought to know what it needs, but such is not the fact. A thin person needs water badly, but often, as in your case, they say, 'I don't care for it.'"

"But are there no rules for living? We hear a great deal about the Laws of Health. What are they?"

"A law, you know, is a rule, precept, maxim, order, or decree with a penalty. The Laws of Health are ten, according to Dr. Black* and relate to air, food and drink, exercise, clothing, climate, occupation, cleanliness, mental quiet, sleep, and marriage relation and social intercourse. Of those, it will be seen, that four are vital. Next to the necessity for pure air is that of 'adequate and wholesome food and drink.' Air is a food, and exercise, sleep, clothing, and climate—and in fact all the rest bear directly on the food question. While there is an inexorable law that we must eat or die, what we shall eat, and when we shall eat, is left to the caprice of appetite or custom.'"

* The Laws of Health, or how disease is produced and can be prevented.

" You say that stimulants, spices, acids and activity prevent fattening. Now is fat the standard of health, if so, and as you seem to intimate that there are rules for fattening, then there must be a science in feeding?"

" There is a scientific basis on which this whole question rests. Too much fat or corpulence is an evidence of a disease tendency, just as is its opposite leanness. Therefore to be healthy we want to know what to eat, so that we may observe the golden mean—*florid plumpness*, which is 'the picture of health the world over.' "

" In your own case you found these rules. Now will you tell me how to get plump? You know I studied medicine two years, had access to a very large medical library, and have conversed with a great many prominent physicians of this country, and have heard a great many whims on this diet-question, now if there is a law to govern us in eating, I am sure the medical profession should know it, for the benefit of suffering, misguided humanity. Will you not put the facts you have given me with their scientific demonstration into some permanent

shape — in your *Medical Investigator* for instance ?”
(See *Ibid* for August 1873).

“ I will when I have digested them better. Now you are off on a sketching tour, I will give you a few hints on feeding: Drink a pint of water, at least, a day — taking half a glass on rising, the same about 10 A. M., 4 P. M., and 9 P. M.; drink with your meals fresh milk but no water; eat hearty and I am sure you will take on flesh.”*

“ When I return I want you to tell me what articles of food are fattening and give me some plain rules about eating. Will you ?”

“ I will be very glad indeed to accommodate you. I have told you what to avoid, now I will tell you what to eat. Water, starchy food, fats, vegetables sweets and quiet, put on the fat.”

“ That is it! Just as we did to fatten pigs when I was a boy. Shut them up in a small pen and gave them all they would eat of corn and slops. That is practical, but I am curious to know the physiological explanation — why this is thus ! ”

* He was absent six weeks and gained ten pounds, was very buoyant and painted more cheerful pictures. His artist friends noticed the change in his paintings. The great Chicago fire swept all these away, however, and he left the city, “ crushed.”

CHAPTER II.

Leanness a Disease.

You ask "is leanness a disease, or disease tendency?" That is a very practical question, as we shall see: The term *leanness* implies a simple absence of fat, and is not to be confounded with thinness and emaciation—terms expressing in different degrees the absence, not only of fat, but also of the gelatinous and albuminous tissues.

Leanness, when it cannot be referred to a satisfactory cause, must be accounted a disease.* When extreme, it is usually accompanied by more or less thinness or emaciation—states of the system which if not explicable on obvious principles, must almost always be considered as morbid.

* Harvey on Corpulence in relation to disease.

It is rare to see a person steadily gaining fat after any pathological reduction of weight, without a corresponding gain in amount and quality of blood.

Almost any grave change for the worse in health is at once betrayed in most people by a loss of fat, and this is readily seen in the altered forms of the face, which because it is the always visible, and in outline the most irregular part of the body, shows first and most plainly the loss and gain of tissue.

The loss of fat especially its rapid or steady loss nearly always goes along with conditions which impoverish the blood, and, on the other hand, the gain of fat up to a certain point seems to go hand in hand with a rise in all other essentials of health, and notably with an improvement in the color and amount of the red corpuscles.

Leanness depends either on predisposing or on exciting causes. Some individuals have a natural tendency to leanness. Such tendency often runs in families, even through several generations.

The first thing which strikes an American in England, is the number of inordinately fat people, and especially fat women. This excess of flesh we

usually associate in idea with slothfulness, but English women exercise more than ours, and live in a land where few days forbid it, so that probably such a tendency to obesity is due chiefly to climatic causes. To this also we may no doubt ascribe the habits of the English as to food. They are larger feeders than we.*

The exciting causes of leanness may be considered under the heads of climate or locality; and diet and exercise. The inhabitants of mountainous and barren sandy regions are naturally disposed to be lean. Leanness, more than from any other cause, results from deficient or innutritious diet; from the free use of acid liquors, as cider, etc.; from excessive bodily and mental activity; and from a variety of affections capable of deranging or suspending the primary assimilating processes and thus of cutting off the supplies—the *modus operandi* of all which, and particularly of deficient and innutritious food and excessive bodily exercise, is sufficiently obvious.

Another cause of leanness may consist in some

* Mitchell on Fat and Blood.

persons, in a natural imperfection of the faculty of assimilating fats. This incapacity of assimilating oleaginous matters shows itself in a variety of ways. Thus there are some individuals whose *stomachs* will not tolerate the least proportion of fatty matters; there are others who never fail to suffer from its use, by what is called *bilious* derangement. Such individuals are usually lean. On the other hand there are individuals whose stomachs will bear any quantity of fat with impunity, and who yet remain lean. These three conditions of the system undoubtedly depend on very different causes. The two first conditions, in particular, most usually occur in individuals of an anxious and nervous character; of great mental susceptibility and activity; and who, moreover, have suffered much mental affliction, real or imaginary. In spare individuals who take fat with impunity, it is either not assimilated at all, and passes through the bowels unchanged; or if the fat be taken up, it is disposed of as fast as it is deposited, so as to prevent its accumulation. This latter more particularly occurs in healthy individuals who take much exercise or are

mentally worried ; and who under no system of diet whatever, would become fat.

There is another class of persons, who, believing that fat food is very innutritious and hurtful, carefully exclude it from their dietary.

Another cause of leanness is the lack of water. It is a strange fact that as a rule, lean persons drink little or no water. They say they do not crave it, therefore they do not drink it.

There is a restless anxiety about lean people that is distressing. They look hungry, sad and irritable. As children they whine and cry and put all creation out of joint.

“ The very thin must certainly, so to speak, live from hand to mouth, and have little for emergencies.”

CHAPTER III.

The Healthy or Physiological Standard.

You ask a very practical question. "How much should a person of a given height weigh—is there a standard between height and weight?"

"A healthy child, male or female, grows in length by more than one-half its size during the first two years; it increases from 50 cent. (19.685 inches) to about 79 cent. (31.10 inches). It trebles or quadruples its weight; that is to say, it weighs 3 to 4 kil. at birth, (equals 7½ to 10 lbs.); 10 kil. (25 lbs.) in the first year; 12 kil. (30 lbs.) in the second.

The following is the rate of monthly increase in the first year, the initial weight being 3.25 kil. (8½ lbs.): First month, 4 kil. (10 lbs.); second month, 4.7 kil. (11.7 lbs.); third month, 5.3 kil. (12½ lbs.);

fourth month, 5.9 kil. (14 $\frac{1}{4}$ lbs.); fifth month, 6.5 kil. (16 $\frac{1}{2}$ lbs.); sixth month, 7 kil. (17 $\frac{1}{2}$ lbs.); seventh month, 7.4 kil. (18 $\frac{1}{2}$ lbs.); eighth month, 7.8 kil. (19 $\frac{1}{2}$ lbs.); ninth month, 8.2 kil. (20 $\frac{1}{2}$ lbs.); tenth month, 8.5 kil. (21 $\frac{1}{2}$ lbs.); eleventh month 8.7 kil. (21 $\frac{1}{4}$ lbs.); twelfth month, 8.9 kil. (22 $\frac{1}{4}$ lbs.)”

Wagner (General Pathology, p. 47), says: “Such special determinations of increase of weight have not merely a theoretical value but also a practical one, for by them we can test in a certain manner the usefulness of a given infant-food (mother's milk, nurse's milk, artificial food).”

“On the average, a child (from six months to eight years) grows in length about 6 cent. each year (equal 2.4622 inches) the weight of the body goes on increasing to the eighth year rising in boys to 20 kil. (50 lbs.), and in girls to 19 kil. (47 $\frac{1}{2}$ lbs.) From this age (eight years) until puberty, boys increase in height 55 cent. (2.165 feet) each year reaching at the age of twelve years a height of 138 cent. (over 4.52 feet), and girls 135 cent. (4.421 feet) on the average. Boys gain about 2 kil. (5 lbs.) in weight per year girls a little more, so that in the twelfth year chil-

dren of both sexes weigh on the average about 30 kil. (75 lbs.)”

“From thirteen to twenty years, youths grow some 30 cent. (11.8 inches), girls 20 cent. (7.8 inches). The increase of weight is even more rapid than before, reaching 58 kil. (145 lbs.) in boys eighteen years old, and in girls of the same age 51 kil. (127½ lbs.)”

“In the twenty-fifth year, the man is 168 cent. (over 5½ feet) in height, and weighs 68 kil. (157½ lbs.), while the woman is 157 cent. (5.15 feet) in height, and weighs 53 kil. (127½ lbs.) Man in the fortieth year attains his maximum weight 63.6 kil. (159 lbs.), and then begins to lose flesh. Women continues to grow heavier, reaching about 56 kil. (140 lbs.) until the fiftieth year. Between forty-five and sixty, men become more corpulent and women rapidly grow older; in both, the size of the body diminishes.” (Wagner).

It is desirable for all persons whether suffering in health or otherwise, to know as near as possible what the normal weight should be. We are indebted to the late Dr. John Hutchinson for weighing alone two thousand six hundred men at various

ages. There is indeed an obvious relation between the height and the weight he so pertinaciously weighed and measured, starting with the lowest men in the tables it will be found that the increase weight was as nearly as possible five pounds for every inch in height beyond sixty-one inches.

The following figures show the relative height and weight of individuals measuring five feet and upwards :

STATURE.

Feet.	Inches.	Should be	Weight.
5	1		120 lbs.
5	2	"	126 "
5	3	"	133 "
5	4	"	136 "
5	5	"	142 "
5	6	"	145 "
5	7	"	148 "
5	8	"	155 "
5	9	"	162 "
5	10	"	169 "
5	11	"	174 "
6	0	"	178 "

That there is for every adult man of a certain height a tolerably definite weight which is not difficult for any individual to find out, and that all considerable permanent additions must consist of fat,

and are really unnecessary, especially in summer.

As to the exact amount of fat which may exist without proving injurious to health, there appears to be the greatest variation, some possessing an enormous development of this tissue and enjoying perfect health.

“It is impossible,” as Dr. Hutchinson remarks, “to say where the weight by excess commences ; it is therefore only in the extremes of weight that we can positively say that there is excess or deficiency. But it is with these extremes that we are now concerned, for it is in extremes only that disease consists and with the slight variations from what as physiologists we lay down as the normal condition our interference is not required.”

It is important to bear in mind that a human body weighing 154 pounds may be said to contain the following compounds and elements :

COMPOUNDS.

	<i>Lbs.</i>	<i>Oz.</i>	<i>Gr.</i>
Water.....	111	0	0
Gelatin.....	15	0	0
Fat.....	12	0	0
Albumen.....	4	3	0

COMPOUNDS—*Continued.*

	<i>Lbs.</i>	<i>Oz.</i>	<i>Gr.</i>
Fibrin.....	4	4	0
Phosphate of Lime.....	5	13	0
Carbonate of Lime.....	1	0	0
Fluoride of Calcium.....	0	3	0
Chloride of Sodium.....	0	3	376
Chloride of Potassium..	0	0	10
Sulphate of Soda.....	0	1	170
Carbonate of Soda.....	0	1	72
Phosphate of Soda	0	0	400
Sulphate of Potassium.....	0	0	400
Peroxide of Iron.....	0	0	150
Phosphate of Potash.....	0	0	100
Phosphate of Magnesia	0	0	75
Silica.....	0	0	3
	154	0	0

ELEMENTS.

	<i>Lbs.</i>	<i>Oz.</i>	<i>Gr.</i>
Oxygen	111	0	0
Hydrogen.....	14	0	0
Carbon.....	21	0	0
Nitrogen	3	8	0
Phosphorus	1	12	190
Calcium.....	2	0	0
Sulphur	0	2	219
Fluorine	0	2	0
Chlorine.....	0	2	47
Sodium.....	0	2	116
Iron.....	0	0	100
Potassium.....	0	0	290
Magnesium.....	0	0	12
Silicon	0	0	2
	154	0	0

The following table shows the daily supply and waste of a human body weighing 155 pounds and measuring five feet eight inches in height. This of course will vary, and requires a little latitude for different countries, but on the whole it may be relied upon :

TAKEN IN.		
1.	<i>Gases.</i>	<i>Oz.</i>
Oxygen.....		24
2.	<i>Liquids.</i>	
Water:		
In beverages.....	68 oz.	
In solid food.....	25 "	
		— 93
3.	<i>Solids.</i>	
Flesh Producers :		
Fibrin	3 oz.	
Albumen and casein.....	1 "	
		— 4
Heat Givers :		
Starch.....	12 oz.	
Fat and Butter.....	5 "	
Sugar	2 "	
		— 19
Indigestible :		
Gelatin	1 oz.	
Cellular	1 "	
Mineral Matter		— 2
		1
		— 143

GIVEN OUT.

	<i>Gases.</i>	<i>Oz.</i>	<i>Grs.</i>
1.			
Carbon	11 oz.		
Oxygen	24 "		
	—		35
2.	<i>Liquids.</i>		
Water:			
By Kidneys.	51 oz.		
By Lungs.	31 "		
By Skin	16 "		
By Alimentary Canal.....	5		
	—		103.237
3.	<i>Solids.</i>		
Insoluble.....	2 oz..		
Soluble :			
Urea	1.200		
Salts.....	1.		
	—		2.200
	—		143.000

"These figures show approximately the nature and extent of the various chemical changes taking place within a human body in a normal state of health in a cycle of twenty-four hours."

The relative proportions given above, will vary somewhat with the different temperaments.

Chemical analysis brings to our aid positive reasons for a classification according to temperament.

M. Lecareau gives the following analysis ratios to 1000 parts of blood :

<i>Adults.</i>	<i>Sanguine.</i>	<i>Lymphatic.</i>	<i>Difference.</i>
	<i>Water.</i>	<i>Water.</i>	
Females.....	793.007	808.710	10.703
Males	786.584	800.560	13.982
	<i>Albumen.</i>	<i>Albumen.</i>	
Females.....	71.284	68.660	2.604
Males.....	65.850	71.701	5.851
	<i>RedCorpuscles</i>	<i>RedCorpuscles</i>	
Females	126.990	117.300	8.874
Males	136.497	116.667	19.830

The greatest difference is in the amount of water. The albumen is about the same. Lack of water produces a preponderance of red corpuscles in the sanguine. The temperaments are largely dependent upon the food taken, and may therefore be changed to a great extent, especially in growing children.

“It is not mere nitrogenous or non-nitrogenous kinds of food that will serve for nutrition, theoretically supposed by the chemist. To form tissue they must be converted into albumen and oil, so as to form the constituent part of the blood. For instance the amount of oxygen in the atmosphere

greatly influences the quantity of food. If cold and moist, more oxygen will unite with the tissues and more nourishment will be required to meet the demand. If warm and rarified, the appetite diminishes and less nutritious food is required, thus it is of the last importance to take these points into consideration. All living beings are governed in the selection of food by laws which the chemist cannot regulate. Hence chemistry may teach us much, but the laws of dietetics after all must be regulated by the study of physiology. It is unnecessary to dwell upon the fact that, of all causes of disease irregularity of diet is the most common, and the sequence is that of all means of cure at our disposal, attention to the quantity and quality of food is by far the most powerful." (Harvey).

CHAPTER IV.

The Importance of Water.

One of the first questions I ask a lean person is, "how much water do you drink?" As a rule they state that they take "very little," "never drink," "don't take a drink of water once a month," or "only drink during hot weather," etc.

Few people appreciate the fact, that, "according to the best calculations, water constitutes in the normal human subject about *seventy* per cent. of the entire weight of the body. The water which thus forms a part of the animal frame is derived mainly from without. It is taken in the different kinds of drink, and also forms an abundant ingredient in the various articles of food. Water is universally present in all the tissues and fluids of the body. It is abundant in the blood and secretions, where its presence is indispensable in order to give them the

fluidity which is necessary to the performance of their functions. Water is therefore an essential ingredient of the fluids, for it holds these solid materials in solution, and enables them to pass and repass through the animal frame. Water is also an ingredient of the solids. Muscles, tendons, cartilages, bones, teeth, glands, skin, etc. If the water of tendons, skin, etc., be evaporated they become yellowish in color, shriveled and unfit for performing their functions.* This accounts for the sallow appearance of lean people.

Water takes part in the vital functions principally by its physical properties. It is the universal solvent for *all* the ingredients of the animal fluids holding them in solution either by its direct liquifying power, or by the aid of other substances which are themselves soluble. It thus enables the nutritious elements of the food to find their way into the circulating fluid, and to penetrate the substance of the solid organs. It permeates the organized membranes of the body and brings into contact with each other the inorganic and organic materials of

* Dalton's Human Physiology, p. 41.

various parts, and enables them to assume new forms by their mutual reactions. In this way it is subservient to all the phenomena of absorption, transudation, exhalation, and even chemical union and decomposition, which make up the internal nutritive functions of the animal frame." (Dalton.)

We get a better idea of the great value of water when we study the proportion in which it enters into each part of the human system, viz., the solids of the adult body contain water in the following proportions: The muscles contain 75 per cent. of water, the bones .13, the cartilages .55, the teeth even .10, the ligaments .768, the brain .789.

The fluids contain water as follows: The blood, .795 per cent., bile .88, milk .887, pancreatic juice 90, urine .936, lymph .96, gastric juice 975, perspiration .986, and the first solvent of the food, saliva contains the enormous quantity of .995 per cent. of water, or only one-half of one per cent. of solid matter.

"The main bulk of the water taken in, does not simply pass through the bowels, but, is taken up by the mucous membrane, and enters the circulating

fluid. As it appears in the secretions it brings with it various ingredients. When it is finally discharged it is mingled in the urine and feces with salts and excrementitious matters, which it holds in solution, and in the cutaneous and pulmonary exhalations with animal vapors and odoriferous materials of various kinds. In the perspiration it also contains mineral sulphates and chlorides, which it leaves behind on evaporation."* Water is also formed in small quantities in the body.

With these facts before us we can readily understand why a person, who does not take much water except in foods, is lean; why the bowels are constipated; the urine high colored: the skin dry and sallow; the feet cold, etc. Lacking the necessary fluidity, the functions are all performed with difficulty. Many cases of dyspepsia are due to lack of water. Many cases of constipation can be cured by a pint or two of water taken between meals. Many cases of irritation of the urinal tract can be relieved by rendering the urine more fluid and oily. Many cases of headache can be relieved by increas-

* Dalton's Physiology, p. 42.

ing the fluidity of the blood. Many a case of functional palpitation of the heart can be mitigated by increasing the volume of the circulating fluid, with an extra pound of water. Many a case of spinal irritation and nervous exhaustion are due to a lack of quantity and quality of the blood current, of which about 80 per cent. is water.

I generally order a half pint of water, to be taken four times a day, *e. g.*, (1) early in the morning, (2) about 10 A. M., (3) about 4 P. M., and (4) before retiring. When the bowels are inclined to constipation I direct that a pinch of salt be added to the morning drink, until the other changes in diet render the salt unnecessary.

I forbid cold water to be taken at the meals, for the simple reason that the stomach is then at its highest functional activity, and cold lowers its temperature, retards digestion, giving the food a chance to general gases, and thus mechanically interfere with the normal contractions of this organ. Warm fluids, like milk and water, facilitates the solution, of the food and hastens its assimilation. In some old dyspeptics where the food is slow of digestion,

remaining hours in the stomach, I have found that a glass of hot water, drank an hour or so after the meal, will re-stimulate the stomach to complete its work, and also aid the absorbents to greater activity. It also carries the food farther down the alimentary tract, and thus relieves the stomach, by throwing more of the work of digestion upon the intestines.

We know that milk is largely digested below the stomach, for the reason that infantile digestion is chiefly intestinal, therefore, I have found milk an excellent article of food to aid the fattening process. It will be seen that milk is composed of nearly 90 per cent. of water, therefore it is readily assimilated.

The great necessity for water, and especially by lean people living in a comparatively dry atmosphere, as is found in many parts of America, is very apparent to the most casual observer. Children, like plants, need plenty of water. As 80 per cent. of their bodies is water they should have their full allowance of this vital fluid. Children flourish best in a moist climate, *e. g.*, Great Britain, Canada, Germany, etc.; while in dry France and America the rearing of infants is difficult.

CHAPTER V.

The Importance of Fat.

“ Is not fat a burden rather than a luxury, a clog to the system rather than a benefit ? ”

The great importance of sufficient fat, stored up in the tissues, is not properly appreciated. Fat is found in nearly all parts of the body ; it aids digestion and assimilation, quickens the circulation, and hastens cell activity.

“ The instinctive desire shown by all nations for an oily diet, and the association of this substance with the ideas of luxury in all times, shows the value of a certain amount of it to man’s comfort. The “ butter and honey ” of the prophet, used as a phrase for royal food, and the reference in almost every other page of the Bible to oil as a luxury, (though it could have been no *rarity* in a land peculiarly described as a “ land of olive oil,”)—these are sufficient to show its estimation among the Hebrews.

The Hindoo Sepoy, when he devours his gallon of rice for a meal, will spend all the " pice " he can get on the clarified butter of the country ; and ' as good as ghee ' is his expression of unqualified praise. It is an error in Dr. Liebig, to state that oily foods are an object of disgust to natives of hot climates ; all races of men require them and seek after them. Throughout mankind there is an instinctive desire for this food." (Harvey on Corpulence).

A moderate amount of fat is a sign of good health, and physiologists generally allow that the adipose tissue (fat) ought to form about the twentieth part of the weight of a man, and the sixteenth of a woman.

Independently of the importance of fat as a non-conducting substance, and therefore very necessary in cold weather in impeding the two rapid escape of animal heat, it may also be regarded as a store of material to compensate for waste of tissue, under sickness or other circumstances entailing temporary abstinence from food.

That fat or some nearly allied principle admits of the highest degree of organization, of which matter

is perhaps capable, is evident from the large proportion in which it enters into the nervous and cerebral tissues; *one-fourth* at least of the solid matters composing the brain and nervous system, is said to consist of oleaginous principles. With the fats are associated an unusually large proportion of phosphorus and other incidental mineral matters.

The tendency to flesh is seen in individuals and also in nations *e. g.*, the Dutch are as stout, as our Americans are proverbially thin.

Over feeding will induce fat and so will the habit of taking too much fluids. The obese are not always great eaters; but they invariably drink a great deal, even though it be only water.

The quantity and quality of fat varies according to the age and the parts in which it is deposited. It is firmer and higher colored in old persons than in the young ones. The color of fat in people is no doubt also influenced by the kind of fat taken. Those who consume fat with much stearine are lighter than those who consume fats made up largely of olein. The yellowish green color of the fat of Italians and Jews is doubtless due chiefly to the

olive oil, which is so largely eaten by these people. It is also more condensed and solid in parts liable to compression than in the omentum, or about the heart, stomach and intestines. In children the fat is distributed over the surface of the body ; but as we grow older it diminishes on the surface, in proportion as it becomes deeper seated. This latter fact will account for the darker skin of adults.

The importance of fat are physical, mental and moral. A child well nourished, fat and fair, grows rapidly and develops easily and finely ; while a child thin in flesh (fat) grows feebly and develops poorly and with a struggle. A feeble girl or boy is almost certain to develop early and prematurely, and like premature fruit early and easily decays. The organs are poorly nourished, there is no fat in the abdomen and the form bends and contracts as in old age, while the fleshy body stands nobly erect and has a royal mien. In the lean, the functions are performed with difficulty ; the digestion is feebly performed ; friction is manifest everywhere and there is often explosions of the nervous system, i. e., spasm, neuralgia, or bursts of passion.

The lean are restless and irritable in mind, rarely contented, never quiet, they form the complaining element of society, and are unstable as a nation.

The oil or fat may be given by the skin, i. e. applied topically if the digestive organs will not take it; e.g. in one case, child teething, marasmatic with hooping cough, had been running down for months in spite of the most skillful treatment and abundant tonics. When I took charge of the case, I thought it could not live two weeks unless speedily relieved. No diet that I could suggest would be taken. Medicines had little effect. Ordered it rubbed with sweet oil every night. In three days it began to eat, and in two weeks it ate the whole time. "Soup!" "soup!" was its cry all day, and if awake in the night would call for "soup." From a living skeleton, with a dry, sallow, dirty skin it became plump, fair and rosy—the picture of health.

Fatty matters are digested by the emulsifying action of the pancreatic fluid; and by being thus broken up into extremely minute globules they are freely admitted into the lacteal vessels; in fact the emulsified globules of fat are seen covering the villi

of the intestines, penetrating their tissues, pervading the subjacent cellular bodies and thus entering the lacteals. From thence they enter into the lymphatic glands through which they pass to the chyle duct, as lymph or white-blood corpuscles. They do not directly pass through the lymphatic glands, but swell the first cells which crowd off the ones on the opposite side. (Letheby).

This fat serves important functions in the processes of digestion, assimilation and nutrition. According to Lehmann, it is one of the most active agents in the metamorphosis of animal matter ; and this is seen not merely in the solution of nitrogenous articles of food during digestion, but also in the conversion of nutrient plastic substances into cells and masses of fibre—connective tissue, which is the upward transformation of white blood, lymph or fat corpuscles with their casein or fibrinous envelop.

Elasser long since observed that during the process of artificial digestion, the solution of nitrogenous food was considerably accelerated by means of fat ; and Lehmann has since determined, by actual experiment on dogs, that albuminous substances

deprived of the fat, remain longer in the stomach, and require more time for their metamorphosis than the same substances impregnated with fat. This is one reason why cow's milk is more difficult of digestion. It will be seen that it is deficient in fat. "It is probable, indeed, that the digestive power of the pancreatic fluid is due, in great measure, to the presence of fat; and that the subsequent chymification of food and its absorption is greatly assisted thereby."

"There is also good reason for believing that it is largely concerned in the *formation* of *bile*, and that the biliary acids are conjugated fatty compounds. This may account for the well-known action of fat, bacon, etc., in promoting the secretion of bile." (Letheby).

The digestive power of fat as we have seen is certainly considerable, and it is no less active in the subsequent conversion of nitrogenous matters into cells and tissues, and then retrograde decay. Colorless blood corpuscles, as we have seen, receive the first impulse of their formation from the metamorphosis of fat; and thus it is an important aid in the genesis of blood.

It would appear from the latest investigations of physiologists that fat plays an equally important part in every kind of cell development. Acherson showed, as far back as 1840, that albumen always coagulates from its solution around a fat globule, and this is seen in the digestion of the little fatty particles of milk which have an envelop like a cell wall of consolidated casein. Hunefield, Nasse and others, have further shown that the nucleoli of cells invariably consist of fat, and that recently formed plasma, always contains more fat than the mature cell. This is one reason why infants need so much fat.

CHAPTER VI.

The Importance of Starchy Food and Sweets.

“Are starchy food and sweets fattening? What uses do they subserve?”

It will be seen that starch is the largest element taken into the body—twelve ounces per day. We take starch in the shape of bread, potatoes, and other vegetables. Starch is placed among the “heat-givers,” but it has other and perhaps more important functions. In the mouth starch is converted into dextrine by the action of the alkaline saliva. This dextrine or gum is absorbed in this shape or is further transformed by the pancreatic juice and bile into grape sugar. In this form it enters the circulation and helps swell the cells. One of the actions of this agent is to prevent the rapid oxidation of the system, and another is to favor the absorption of

oxygen in the lungs. "The small quantity of sugar naturally present in the blood aids in retaining the carbonate and phosphate of lime in solution, and according to Hoppe, assists that metamorphosis by which fat is generated from albuminous compounds." (Carpenter Physiology, p. 94).

If the amount of sugar taken is in excess, especially by children, lactic acid is developed in such large quantities, that the lime of the bones is dissolved out, causing "bow-legs," "haunch-backs," rickets, hydrocephalus, and other serious disorders.

Sweets are chiefly taken in adult life in the form of cane sugar ($C_{12} H_{22} O_{10}$). Children take large quantities of milk sugar ($C_{12} H_{24} O_{12}$) with their milk. The cane sugar must be changed into grape sugar ($C_6 H_{12} O_6 + H_2O$) before it can be taken up by the system. Part of this sugar is converted into lactic acid, and a portion of this saccharine matter (hydro-carbon) passes into the system by being absorbed by the portal circulation, and on to the liver where it is detained and metamorphosed. The next step of digestion is the transformation of lactic acid into carbonic acid and water. These

various changes aids the general transformations of the system, as well as generate much heat.

It is well known that sweets aid in the fattening process. "In sugar growing countries, the negroes and cattle employed on the plantations grow remarkably stout, while the cane is being gathered and the sugar extracted. During this harvest the saccharine juices are freely consumed ; but when the season is over the superabundant adipose tissue is gradually lost. Saccharine matters are especially fattening." (Harvey on Corpulence).

In the Orient the women of the harem are fattened, against a certain day, by feeding them freely with honey and black bread.

Milk containing much sugar is easier of digestion than milk poor in sweets. The sugar of the milk swells the globules. In the same way it doubtless aids digestion and assimilation. Whatever may be the proper explanation, the presence of sweets very much aids the fattening process.

Starchy food taken in excess, taxes the liver till it becomes enormous in size from the deposit of fat therein. If persevered in, respiration is impeded and there is great danger of suffocation.

CHAPTER VII.

How to Become Plump.

" You want to know how to increase in fat, and then, how to keep plump."

In the first chapter I told you how I became plump. Accidentally, or perhaps through necessity, I began to eat oysters as a steady diet, day after day. Often I ate them when I really did not want them—rather than let them spoil. I noticed that, after taking oyster stews with supper, I began to bloat about the waist. This bloating was rather distressing at first, and, as I saw it increase from day to day, I became a little concerned. I have often had the same uncomfortable, distended feeling after a hearty meal of substantial food, and found it was always followed by severe indigestion, but now no serious result followed.

I soon learned that this bloating was the first step in the fattening process. We must "bloat up,"

then "fat up." This bloating is often very uncomfortable, and some ladies have suddenly abandoned the plans of living, laid down for fattening, on the appearance of this marked *embonpoint*. Mothers have become alarmed at the enlarged abdomens of the children, that seemed a deformity compared with their "spindle shanks;" but a little perseverance in the fattening diet, soon changes all this for plump bodies, rounded limbs and full faces.

Why oysters and milk are fattening will be seen by their analyses :*

Oysters are composed of the following :

Water	80.385
Nitrogenous matter.....	14.010
Fatty	1.515
Saline.....	2.695
Non-nitrogenous matter and loss	1.395
	100.000

Milk has the following ingredients :

Water	86.0
Nitrogenous matter.....	4.1
Fatty..... "	3.9
Lactin (sugar)	5.2
Saline matter	0.8
	100.0

* Pavy on Food and Dietetics.

In addition to the hints already given, a few general directions may be allowed for those desirous of increasing their bank account of working force—fat.

Special cases will need special directions, which every physician who is skilled in physiology and in applying the general rules here laid down, ought to be competent to give. Serious disease may account for the leanness, and a cure must precede the fattening process, but I am satisfied that leanness is responsible for many of the ailments that “flesh is heir to.” Many cases of chronic disease are due simply to chronic starvation. In these cases proper living is a vital question.

Activity of mind or body if excessive prevents fattening. Sufficient rest must be secured. Persons who want to get and keep plump, must give the system time to recruit. They should retire about 10 P. M. and enjoy sleep until 6 or 7 A. M. A brain worker needs more sleep than a muscle worker—a mechanic for example. To ensure sound sleep, the mind should be diverted, an hour or so before retiring, from business into some less absorbing line, as pleasant conversation or quiet, devout

meditation. Those who cannot divert the mind will be apt to break down, sooner or later, and will be very hard to fatten.

When the appetite is good and the person eats well and lives moderately, I have found that a pint of water taken in four doses (morning, 10 A. M., 4 and 9 P. M.) will often be all that is needed to insure a prompt and constant increase of fat.

A drink of water should be taken immediately on rising. It should be fresh water and not what has stood in the lead pipes or in a newly painted pail. It should not be too cold. If water taken at this time chills the stomach, it should be swallowed slowly, after being held in the mouth for some time. If there is any constipation, a pinch of table salt may be added to this half glass of water.

The breakfast should be plain and substantial, and should be hearty the year round, and especially in summer. "Egg on toast, with a cup of coffee" is not enough. Potatoes, meat, (fried mush or oat meal porridge, is a good substitute), bread and butter, with some form of drink should be taken. The drink may be "milk and water" sweetened. There

is no serious objection to tea or coffee if they are well "milked." Coffee is better than tea at this hour, as being less stimulating. Milk, warm or warmed with water, is a substantial stimulant, it both increases, and quickens, the circulation of blood.

If the breakfast should seem to lay heavy on the stomach, after an hour, a small drink of water may be taken: This aids the solution of food, facilitates digestion and carries the food on down into the intestines.

Two or three hours after this meal, a drink of water (half a glass) should be taken. Too much water should be avoided, as it sends the blood too rapidly into the capillaries and some of the serum transudes in the form of perspiration. Profuse sweating at any time is an evidence of weakness, and should not be encouraged. If the person gets faint before dinner, because the work is hard or the weather cold and damp, a cracker may be eaten at 10 o'clock with the glass of water. This is easy of digestion, being changed below the stomach into dextrine, and in that shape passes rapidly into the

circulation. In moist Great Britain a lunch at 10 A. M. is a common custom.

The hearty meal of the day should come four hours—not later than five hours—after breakfast. The first thing taken should be a light soup, not highly seasoned. Most of the soups are too thick and too highly seasoned. Soup reinforces the digestive juices, and enables them better to dissolve, digest and assimilate the more substantial and nourishing articles that should compose this meal. Vegetables should enter largely into this meal.

Wadd has told us that “among the Asiatics there are Brahmins who pride themselves on their extreme corpulency. Their diet consists of farinaceous vegetables, milk, sugar, sweetmeats, and ghee. They look upon corpulency as a proof of opulence; and many arrive at a great degree of obesity without tasting anything that has ever lived.”

Dr. Fothergill stated that a strict vegetable diet produces exuberant fat more certainly than other means.

Another value of vegetable food, it is also less

stimulating. In fact, recent observations have demonstrated that it is the best form of diet to control the desire for stimulants.

Condiments, spices, acids and stimulants, unless very mild, should be avoided. Cold water should also be eschewed, as it chills the stomach and thoroughly weakens it. The drink should be chocolate or milk. This meal should be eaten slowly with pleasant company. An half hour rest or siesta should then be indulged in, if possible. The whole force of the body should now be concentrated on digestion and assimilation.

If our business men would follow this plan, insisting on their employees doing likewise, fewer of them would "break down," or up, and more and better work would be the result.

Persons who are broken of their rest at night, as physicians, for example, can recruit the brain by indulging in a hearty meal, which is stupefying.

If this meal lays heavy on the stomach, as it often does with dyspeptics, I have found that a drink of plain hot water, (sweetened or salted to taste), aids nicely to complete digestion.

About 3 or 4 P. M. a drink of water should be taken. Perspiration at this time of day is often a relief, if not excessive.

The evening meal should be light. Bread and tea with a mild form of sauce is not amiss. The tea should be weak and well milked. Bread and milk, or oat meal mush and milk is almost too substantial, unless the person is exhausted and hungry. The milk should be warmed with water. The general system, at this time of day, needs relief — a clearing out — and this is accomplished by the light stimulating food. A hearty meal at this hour clogs the circulation, and makes sleep heavy and unrefreshing, unless late hours are indulged in. If the person *must* be up four or five hours more, this meal should be more substantial than if one is to retire at nine or ten o'clock. Children and old people should retire early. Artificial light taxes the brain and nervous system, and the less of it the better for health and sound sleep.

Before retiring a half glass of water should be drank. This quickens the circulation, aids the elimination of post-organic matter from the tissues,

and ensures quiet and refreshing sleep. Little if any brain work should be done at this recruiting time. The brain needs diversion. This is the time for friendly society. If a habit of night-work has been acquired, it should be broken up as speedily as possible. The fact that consumptives, as a rule, are "owls," should be evidence enough that night-work of any kind is too consuming. There is more truth than poetry in the maxim,

"Early to bed and early to rise
Make a man *healthy, wealthy and wise.*"

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